

## CLAIMS

- 1    1. A method of forming a wear-resistant reinforcing coating on a substrate, the method
- 2    comprising:
  - 3       (a) applying a liquid matrix material to the substrate;
  - 4       (b) disposing reinforcing fibers in the liquid matrix material;
  - 5       (c) placing particulate in contact with the liquid matrix material on an opposite
  - 6       side of the fibers from the substrate; and
  - 7       (d) hardening the liquid matrix material, thereby forming a composite of
  - 8       reinforcing fibers in a matrix of the hardened liquid matrix material with the
  - 9       wearing surface of particulate.
- 1    2. The method in accordance with claim 1, wherein the substrate is a solid substrate.

- 1     3. The method in accordance with claim 2, wherein the solid substrate is concrete.
- 1     4. The method in accordance with claim 2, wherein the solid substrate is asphalt
- 2     pavement.
- 1     5. The method in accordance with claim 2, wherein the solid substrate is wood.
- 1     6. The method in accordance with claim 2, wherein the solid substrate is fiberglass
- 2     composite.
- 1     7. The method in accordance with claim 2, wherein the solid substrate is metal.
- 1     8. The method in accordance with claim 2, wherein the solid substrate is modular bricks.
- 1     9. The method in accordance with claim 1, wherein the substrate is particulate.
- 1     10. The method in accordance with claim 9, wherein the particulate is soil.
- 1     11. The method in accordance with claim 9, wherein the particulate is sand.
- 1     12. The method in accordance with claim 9, wherein the particulate is gravel.

- 1    13. The method in accordance with claim 9, wherein the particulate is a combination
- 2    selected from the group of soil, sand and gravel.
  
- 1    14. The method in accordance with claim 1, further comprising the step of interposing a
- 2    membrane between the substrate and the liquid matrix material for preventing the liquid
- 3    matrix material from adhering substantially to the substrate.
  
- 1    15. The method in accordance with claim 14, wherein the membrane is plastic sheeting.
  
- 1    16. The method in accordance with claim 14, wherein the membrane is a release agent.
  
- 1    17. The method in accordance with claim 14, wherein the substrate is a solid substrate.
  
- 1    18. The method in accordance with claim 17, wherein the solid substrate is concrete.
  
- 1    19. The method in accordance with claim 17, wherein the solid substrate is asphalt
- 2    pavement.
  
- 1    20. The method in accordance with claim 17, wherein the solid substrate is wood.

1    21. The method in accordance with claim 17, wherein the solid substrate is fiberglass  
2    composite.

1    22. The method in accordance with claim 17, wherein the solid substrate is metal.

1    23. The method in accordance with claim 17, wherein the solid substrate is modular  
2    bricks.

1    24. The method in accordance with claim 14, wherein the substrate is particulate.

1    25. The method in accordance with claim 24, wherein the particulate is soil.

1    26. The method in accordance with claim 24, wherein the particulate is sand.

1    27. The method in accordance with claim 24, wherein the particulate is gravel.

1    28. The method in accordance with claim 24, wherein the particulate is a combination  
2    selected from the group of soil, sand and gravel.

1    29. A wear-resistant reinforcing coating formed on a substrate, the coating comprising:  
2                 (a) a matrix adjacent the substrate;

3           (b) reinforcing fibers disposed in the matrix for reinforcing the matrix; and  
4           (c) particulate adhered to the matrix on an opposite side of the fibers from the  
5           substrate.

1       30. The wear-resistant reinforcing coating in accordance with claim 29, wherein the  
2       substrate is a solid substrate.

1       31. The wear-resistant reinforcing coating in accordance with claim 29, wherein the  
2       substrate is particulate.

1       32. The wear-resistant reinforcing coating in accordance with claim 29, further  
2       comprising a membrane interposed between the substrate and the matrix, thereby  
3       preventing adhesion of the matrix to the substrate.

1       33. The wear-resistant reinforcing coating in accordance with claim 32, wherein the  
2       substrate is a solid substrate.

1       34. The wear-resistant reinforcing coating in accordance with claim 32, wherein the  
2       substrate is particulate.

1       35. A method of forming a wear-resistant reinforcing coating on a solid substrate, the  
2       method comprising:

3                 (a) applying a liquid matrix material to the substrate;

4                 (b) interposing a membrane between the substrate and the liquid matrix material  
5                 for preventing the liquid matrix material from adhering substantially to the solid  
6                 substrate;

7                 (c) disposing reinforcing fibers in the liquid matrix material;

8                 (d) placing particulate in contact with the liquid matrix material on an opposite  
9                 side of the fibers from the substrate; and

10                 (e) hardening the liquid matrix material, thereby forming a composite of  
11                 reinforcing fibers in a matrix of the hardened liquid matrix material with the  
12                 wearing surface of particulate.

1       36. A wear-resistant reinforcing coating formed on a solid substrate, the coating  
2       comprising:

3                 (a) a matrix adjacent the substrate;

4                 (b) a membrane interposed between the substrate and the matrix, thereby  
5                 preventing adhesion of the matrix to the substrate;

6                 (c) reinforcing fibers disposed in the matrix for reinforcing the matrix; and

7                 (d) particulate adhered to the matrix on an opposite side of the fibers from the  
8                 substrate.

- 1       37. A method of forming a reinforced floor having a substrate, the method comprising:
  - 2           (a) applying a liquid matrix material to the substrate;
  - 3           (b) disposing reinforcing fibers in the liquid matrix material;
  - 4           (c) hardening the liquid matrix material, thereby forming a composite of
  - 5           reinforcing fibers in a matrix of hardened liquid matrix material, wherein an
  - 6           exposed surface of the reinforcement is unsuitable for foot traffic; and
  - 7           (d) mounting a layer of rigid flooring material to said substrate above said
  - 8           composite of reinforcing fibers, said layer of flooring material having a wearing
  - 9           surface that is suitable for traffic.
- 1       38. A reinforced floor having a planar substrate, the reinforced floor comprising:
  - 2           (a) a hardened, planar matrix mounted to the substrate;
  - 3           (b) reinforcing fibers disposed in the matrix;
  - 4           (c) a planar layer of rigid flooring material mounted to the substrate above the
  - 5           reinforcing fibers, said layer of flooring material having a planar wearing surface
  - 6           that is suitable for traffic.
- 1       39. A modular flooring unit of a discrete size and weight that can be lifted by a human,  
2       the flooring unit comprising:
  - 3           (a) a planar matrix;

4           (b) reinforcing fibers embedded in the matrix for reinforcing the matrix;  
5           (c) particulate mounted to a major surface of the matrix.

1       40. The flooring unit in accordance with claim 39, wherein the particulate mounted to  
2       the matrix forms the traffic-bearing surface of the flooring unit.

1       41. A method of forming a modular flooring unit of a size and weight that can be lifted  
2       by a human, the method comprising:

3           (a) placing a liquid matrix material in a receptacle;  
4           (b) disposing reinforcing fibers in the liquid matrix material;  
5           (c) placing particulate in contact with the liquid matrix material on an opposite  
6       side of the fibers from the substrate; and  
7           (d) hardening the liquid matrix material, thereby forming a composite of  
8       reinforcing fibers in a matrix of the hardened liquid matrix material with a traffic-  
9       bearing surface of particulate.

1       42. A method of forming a wear-resistant reinforcing coating on a substrate, the method  
2       comprising:

3           (a) aligning a composite with the substrate, the composite comprising a hardened  
4       matrix embedded with reinforcing fibers;  
5           (b) applying an adhesive between the composite and the substrate;

- 6           (c) forcing the composite against the substrate with the adhesive in a layer
- 7           interposed between the composite and the substrate;
- 8           (d) applying adhesive to the composite on a side of the composite opposite the
- 9           substrate;
- 10          (e) placing particulate in contact with the adhesive; and
- 11          (f) hardening the adhesive, thereby forming a wearing surface of particulate.